

Energy Efficiency Codes Study Committee

Final Report

February 7, 2000

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ENERGY EFFICIENCY CODES STUDY COMMITTEE

DATE: February 7, 2000
TO: The Honorable Jane Dee Hull, Governor
The Honorable Jeff Groscost, Speaker of the House of Representatives
The Honorable Brenda Burns, President of the Senate
RE: Final Report

Pursuant to Laws 1999, Chapter 336, the Energy Efficiency Codes Study Committee is required to report its findings and recommendations to the Governor, the Speaker of the House of Representatives and the President of the Senate. A copy of the report shall be provided to the secretary of state and the director of the Department of Library, Archives and Public Records.

The Energy Efficiency Codes Study Committee met twice in 1999. The conclusion summarizes the findings and actions of the Committee.

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CONCLUSION

Pursuant to Laws 1999, Chapter 336, the Energy Efficiency Codes Study Committee is established. The Committee is charged with reviewing the 1998 International Energy Conservation Code and relevant state energy efficiency codes currently in existence and determining an appropriate energy efficiency code for Arizona that may significantly increase energy efficiency in buildings in this state. The Committee is also charged with reviewing different incentives, including tax incentives, for increasing energy efficiency.

The Energy Efficiency Codes Study Committee is required to report its findings and recommendations to the Governor, the Speaker of the House of Representatives and the President of the Senate. A copy of the report shall be provided to the secretary of state and the director of the Department of Library, Archives and Public Records.

The Committee charged the Arizona Department of Commerce Energy Office with determining an energy code that would be voluntary, relevant and beneficial to Arizona and incentive-based.

ARIZONA STATE LEGISLATURE

Interim Meeting Notice

Open to the Public

Brian Lockery, Assistant Research
Analyst

ENERGY EFFICIENCY CODES STUDY COMMITTEE

DATE: Wednesday, November 3, 1999

TIME: 9:00 a.m.

PLACE: Senate Hearing Room 3

AGENDA

1. Call to Order
2. Introduction of Members and Opening Remarks
3. Presentation by Arizona Department of Commerce Energy Office
4. Discussion
5. Proposals
6. Adjourn

Members:

Senator David A. Petersen, Co-Chair
Senator Gus Arzberger
Senator Tom Freestone

Representative James P. Weiers, Co-Chair
Representative Marilyn Jarrett
Representative Andy Nichols

Ms. Sarah Cramer
Mr. Dick Foreman
Mr. Joseph Franquero
Mr. Douglas Hood
Mr. Vincent Hunt
Mr. Fred King
Ms. Karen Krause

Mr. Chris Mathis
Mr. Denny Miller
Ms. Amanda Ormand
Mr. Gary Scaramazzo
Mr. Ric Stephenson
Mr. Jerry Thieken
Ms. Connie Wilhelm-Garcia

BL/mn
10/28/99

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ARIZONA STATE LEGISLATURE
Forty-fourth Legislature – First Regular Session

ENERGY EFFICIENCY CODES STUDY COMMITTEE

Minutes of Meeting
Monday, November 3, 1999
Senate Hearing Room 3 – 9:00 a.m.

(Tape 1, Side A)

Cochairman Weiers called the meeting to order at 9:10 a.m.

Members Present

Ms. Sarah Cramer	Representative James P. Weiers, Cochair
Mr. Dick Foreman	Representative Marilyn Jarrett
Mr. Joseph Franquero	Mr. Chris Mathis (telephonically)
Mr. Douglas Hood	Mr. Denny Miller
Mr. Vincent Hunt	Ms. Amanda Ormand
Mr. Fred King	Mr. Jerry Thieken
Ms. Karen Kraus	Ms. Connie Wilhelm-Garcia

Members Absent

Senator David A. Petersen, Cochair	Representative Andy Nichols
Senator Gus Arzberger	
Senator Tom Freestone	

Speakers Present

Amanda Ormand, Energy Director, Arizona Department of Commerce Energy Office
Jim Westberg, Program Administrator, Arizona Department of Commerce Energy Office
Charlie Gohman, Manager of Energy Conservation and Engineering, Arizona
Department of Commerce Energy Office
John Duncan, Engineer, Arizona Public Service

(Tape 1, Side A)

Introduction of Members and Opening Remarks

Cochairman Weiers opened the meeting with a roll call. Each member was introduced and gave a brief description of their business with the committee.

Presentation by Arizona Department of Commerce Energy Office

Amanda Ormand, Energy Director, Arizona Department of Commerce Energy Office explained that the states started adopting energy efficiency codes after the passage of the Energy Policy Act of 1992. This Congressional Act stated two things:

1. The states should review their codes to see if they are in compliance with the Model Energy Code (MEC), which is typically used for residential construction;
2. The states should adopt a commercial building code, which typically is the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE).

Ms. Ormand explained that these two codes have gone through several different iterations and have become more stringent over time as technology has improved. In response to inquiry from Representative Weiers regarding compliance in Arizona, Ms. Ormand stated that we are not in compliance and that Arizona does not have a state residential code or a state commercial code. However, there have never been any penalty provisions in the congressional language for not adopting the codes.

Ms. Ormand explained that more than half of the states have adopted commercial codes and about 1/3 of the states have adopted residential codes. She said that state codes became prevalent in 1992 and the State of Arizona has not looked at codes legislatively or in any other policy forums. However, Pima county and the City of Tucson have adopted the Model Energy Code (MEC) and have modified it to be appropriate for the desert climate for the city and county area. She explained that the Sustainable Energy Code was developed in Tucson for the community of Savanna, which is an 820 acre master planned community meant to be a resource efficient community. The Sustainable Energy Code is very stringent on water and energy conservation and is mandatory for this community although it is used voluntary throughout the Tucson area.

Ms. Ormand discussed the State of Arizona Department of Administration and stated that they build state buildings to the ASHRAE commercial building standard.

Jim Westberg, Program Administrator, Arizona Department of Commerce Energy Office, explained the Commercial Building Code of the American Society of Heating, Refrigerating and Air Conditioning Engineers or ASHRAE. He discussed the following:

- ASHRAE published the first Commercial Energy Standard in 1975;
- ASHRAE Board passed revisions in June 1999;

- ASHRAE now requires the standards be approved by the Illuminating Engineers Society (IES) and the American National Standards Institute (ANSI);
- Challenges made by environmental groups and gas industry. Mr. Westberg pointed out that there are some environmental groups saying that this current revision is not very stringent. However, ASHRAE is a group of 50,000 members nationwide and represents all aspects of the industry from air conditioning manufacturers to installers. So, the standards were created to meet everyone's needs.

Mr. Westberg discussed the major provisions of the 1999 ASHRAE standard as follows:

- The target savings are at least 20% over 90.1 in 1989 and this is due to improvement in technology;
- The code is written in code language so that jurisdictions can understand it;
- There has been an attempt to make the standard easier to use;
- Consideration was given to both heating and cooling;
- Revision covers the entire building, HVAC systems, water heating, lighting and other equipment.

Mr. Westberg stated the goals of the International Energy Conservation Code (IECC) are to (1) adequately conserve energy, (2) not unnecessarily increase construction costs, (3) not restrict the use of new materials, products or methods and (4) no preferential treatment to materials, products or methods.

Vincent Hunt asked for clarification regarding the issues with the environmental groups and the gas industry, as well as international code and whether or not it references the current ASHRAE or the latest version. Mr. Westberg explained that the new ASHRAE will be effective in the year 2000 and is not officially approved, so currently the older standards are being used at this time. With respect to the natural gas industry, Mr. Westberg was unclear as to the issue with the natural gas industry but said that he would get the information and get back to Mr. Hunt.

Douglas Hood inquired about the 3-ring binder which contained the proposed energy document that was distributed to the Members for their review and asked if it will come before the Committee. Mr. Westberg stated that it is a copy of the ASHRAE standards that were passed by the ASHRAE board at their national committee meeting. He explained that they are entertaining these challenges by the groups and whether or not there will be any changes is unclear.

Representative Weiers stated that he found it interesting that people from other parts of the country try to influence their standards regarding what they think is right because Arizona is unique and offers a lot of different things here that most people wouldn't recognize until they come here. He explained that to have ASHRAE develop a code for Arizona is wrong and because of our unique climate, we need our own standard. Representative Weiers referenced a bill that would create a code and discussed the opposition to that bill. He stated that we do need to develop an energy code but he does

not want a mandatory code. He suggested that the Department of Energy develop a code that is not mandatory but is incentive-based.

Senator Arzberger stated that a statewide code would not work in Arizona because of the different elevations and temperatures throughout the state and that if a code was developed, it should fit the different locations within the state. Amanda Ormand agreed with Senator Arzberger and explained that there are typically five zones within the state of Arizona and anything adopted would have something for the specific climate zones.

Chris Mathis clarified two items regarding the model codes discussed, particularly in the context of Arizona. He explained that in the development of these codes, it is understood that there are different climates within the state. The codes address all of the climate zones so that means that there are different building requirements within that zone. He said that the code is proven climatically, meaning the local climate helps determine what the code requirements are for insulation levels, windows, and solar shading and air conditioning control. He added that any of the models discussed so far could be applied to climates worldwide.

(Tape 1, Side B)

Charlie Gohman, Manager of Energy Conservation and Engineering, Arizona Department of Commerce Energy Office, discussed the regulations of the Model Energy Code (MEC). He explained the MEC compliance methods as follows:

- Systems Analysis – does this home have the same or less purchased energy than a home design using the Component Performance approach?
- Component Performance – each component (wall, attic, floor) must meet a specific level (U-value).
- Acceptable Practice – lists building practices that can be used to meet the Component Performance Values.

Mr. Gohman gave a brief summary of where we are in Arizona in relation to the Model Energy Code (MEC). He explained that, in the low desert, the standard house built today exceeds the MEC standards, in the high desert, the homes are right at MEC standards and homes built in the mountain areas are below MEC standards. Representative Weiers asked for a definition of high desert. Mr. Gohman explained that would be comparable to the Payson-Prescott-Flagstaff area.

Mr. Mathis asked which version of the Model Energy Code is being used to arrive at these kinds of global assessments. Mr. Gohman explained that these are based on the 1995 standard building practices.

Discussion

Amanda Ormand closed the presentation with the following questions:

- Will adoption of codes save energy?

The committee agreed that the adoption of codes would save energy.

- What are today's building practices?

Representative Jarrett asked about the high mountain areas with respect to the homes not meeting code. Mr. Gohman explained that because there are no energy codes established in Flagstaff, there is no requirement to meet them.

Connie Wilhelm-Garcia stated that it is important to note that the reason MEC has been exceeded in Maricopa County is because the building community worked with the utility companies, the energy office and FHA to ensure that it happened. Representative Weiers added that consumer response is also a huge factor. Ms. Wilhelm-Garcia stated that the mortgage industry has assisted in regard as well as HUD in providing energy efficient mortgages, and do help the consumers qualify based on the energy costs.

Representative Weiers suggested that the committee come up with some sort of a code working with the Department of Energy, something to base incentives on, such as cash incentives or tax incentives. Jerry Thieken suggested that the committee use caution when considering an incentive-based program because of the cost. A tax benefit incentive program would require inspection and that is a very expensive part of the equation of having codes.

Denny Miller stated that although he agreed with an incentive-based program, his research has led him to believe that there is a lot that goes into rating a house and how it performs and the Model Energy Code here in Arizona is not adequate. Ms. Ormand stated to that point that the energy office had talked with the City of Phoenix regarding codes and learned that inspections are done typically twice during construction. She agreed with Representative Weiers and explained that an incentive-based standard would put the onus of proving the building standard back on the builder or the person trying to participate, rather than having the city go out one to two more times for further inspections.

Ric Stephenson stated that the utilities have done a great job in responding to their customers with respect to customer inquiry regarding managing utility costs. He added that the industry is already in this voluntary nature of addressing the energy efficient practices out there. He pointed out that almost every standard feature of a new home, there is an area which displays the practices that will give the customers more control of their energy bills. He added that this is an opportunity for the builders, utility companies and the state to provide more information about what the customer can expect. He added that although much progress has been made, there is always room for improvement.

John Duncan, Engineer, Arizona Public Service, stated that Arizona Public Service is presently conducting training programs and continuing to improve and make necessary changes. He added that his concern with the code was that the progress might stop.

Chris Mathis pointed out that in his travels throughout the country, he talks to about 3,000 builders every year regarding codes and the market transformation sought by the states when they implement new codes. He stated that codes are minimums and if they are met, then that is the least efficient building that can be built by law. Mr. Mathis stated that what he has found to be most effective in bringing about market transformation in these states that are looking to either revise their existing codes or implement new codes, is to have both a push and a pull. Codes are an integral part but not a stand-alone. Lastly, Mr. Mathis commented that the building industry has been very proactive in developing new technologies that are now rated, labeled and certified so the issue of verification is not minimal and the ability to ensure compliance is now very easy to identify and quantify. The modeling techniques identified in the codes give builders a huge range of opportunities to build what they want to build and differentiate themselves in the market place but are still able to demonstrate compliance with those requirements.

Ms. Ormand commented that Tucson Electrical Power has an Energy Guarantee Program where they will guarantee that the utility bills of the house being bought do not go over approximately \$200 per month. Mr. Gohman stated that it depends upon the house and it is for heating and cooling. He added that there are a number of programs in the nation now that are doing this. This is another incentive geared toward the consumer.

Dick Foreman pointed out that the Tucson program requires customers to use electrical appliances and stated that he has a problem with programs that restrict customer choice.

Representative Jarrett inquired about the guaranteed payment program and asked if those who are not on the program cover the cost for those who are. Ms. Wilhelm-Garcia stated that the homeowner would bear the cost. She explained that there would be additional costs to get the house energy efficient, so while the energy costs are lower, the home buying costs are higher.

(Tape 2, Side 1)

In response to inquiry from Representative Jarrett, Mr. Foreman explained that utilities such as APS, Southwest and Tucson Utility are regulated by the State Corporation Commission. In response to inquiry from Representative Weiers, Mr. Foreman explained that the premise of Tucson Electric is not based on choice, rather they get to choose which appliances are electric. He added that his concern is that we not compromise customer choice.

Mr. Mathis commented that in talking with builders, they share the same concern. They like to have the latitude and flexibility. That is one of the beauties of both the International Energy Code, formerly the Model Energy Code, as well as the ASHRAE

code for commercial buildings. The fundamental premise of both codes allows one to use and select from a variety of energy sources, window and shading technologies, etc., as long as the code is met.

Representative Weieres stated that the Department of Energy should be working on this and suggested that this Committee make the recommendation to request the Department of Energy to come up with something that the Committee can start with. He added that currently, the Committee agrees that we can improve, but if we are going to get into the incentive process, we need to have something to start with.

Ms. Ormand offered some direction with respect to adopting something for the Committee's consideration and asked if it would be voluntary and if so, do we want to make sure that in the desert climate that are exceeding the MEC, do we want to place the code well above what is currently being built? Representative Weiers stated that he would run legislation and get support for a good code with a high bar in an effort to pass legislation where there are nice financial rewards.

Mr. Douglas Hood agreed with Representative Weiers' position but asked to keep in mind that if we start out with voluntary standards that have a high level, eventually, they will become a minimum standard that will be adopted and required to be enforced across the board.. Ms. Wilhelm-Garcia added that she also thought it would be very valuable for the committee to understand what the cost would be to the homeowner to go to a 60% over current standard as the Legislature deliberates incentives.

In response to inquiry from Mr. Thielen, Mr. Weiers explained that this Committee is mandated to adopt a code. He added that some reasons for adopting the code include better housing for the people of this state, better commercial and the ability to receive some tax incentives.

Ms. Ormand inquired as to commercial codes and commercial building practices. Karen Krause commented that there is much more room for improvement in commercial than in residential. Representative Weiers asked that if the Committee directed the Department of Energy to commence work on a basic plan, who would that be directed to? Ms. Ormand stated that something would be brought back regarding a voluntary plan. Representative Weiers requested that there be a motion that the Committee directs the Department of Energy to start looking into this. He added that there would be another committee before the end of the year. However, it will take 18 to 20 months before a code is in place.

Mr. Hunt pointed out that the City of Tucson and the Pima County area have adopted the 1995 Model Energy Code with specifics to the Tucson desert climate and offered to the study the adopted desert environment code. Mr. Hunt suggested setting a higher target for incentives.

Mr. Mathis pointed out that with regard to implementation, there is money available from the U.S. Department of Energy for implementation ranging from training for building

code officials to builder training. Secondly, he pointed out that if the Committee is going to do some assessment of the various codes and their applicability to Arizona, his strong recommendation is that the most recent versions of the codes be used, the 1998 IECC and the 1999 ASHRAE Standard 90.1. Those are the two most recent residential codes. Lastly, he stated that there had been a number of studies on cost effectiveness for taxpayers. Energy efficient buildings are cheaper to own and, therefore, more people can be housed. That data and analysis showing the cost benefit of more energy efficient housing should be considered and Mr. Mathis offered to bring that information to the next meeting.

Representative Jarrett moved that the Department of Energy begin working towards development of a voluntary model energy code to work with members of this Committee. Additionally, Department of Energy would apply for a grant for any monies to assist in this effort. Motion is carried.

Representative Weiers stated that this Committee would be carried into the next year.

Without objection, meeting is adjourned at 10:10 a.m.

Robyne Richards, Committee Secretary

(Original minutes, attachments and tapes are on file in the Chief Clerk's Office)



Arizona House of Representatives House Majority Research MEMORANDUM

Brian Lockery
Assistant Legislative Research Analyst
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Phoenix, AZ 85007-2848
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To: Members of the Energy Efficiency Codes Study Committee

Re: Code Language

Date: November 3, 1999

Energy Efficiency Code Acronyms

ASHRAE – American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BCAP – Building Codes Assistance Project
BEES – Building Energy Efficiency Standards
BOCA – Building Officials and Code Administrators International, Inc.
BSGP – Building Standards and Guidelines Program
CABO – Council of American Building Officials
CM – continuous maintenance
DOE – U.S. Department of Energy
EEM – Energy-efficient mortgages
EPA – National Energy Policy Act
FHA – Federal Housing Administration
HDD – Heating Degree Days
HERS – Home energy rating
HUD – U.S. Department of Housing and Urban Development
IBC – International Building Code
ICBO – International Conference of Building Officials
ICC – International Code Council
IECC – International Energy Conservation Code (Formerly MEC)
IMC – International Mechanical Code
IPC – International Plumbing Code
IPSDC – International Private Sewage Disposal Code
IRC – International Residential Code
MEC – Model Energy Code (Now IECC)
MPS – Minimum Property Standards
NFRC – National Fenestration Rating Council
SBCCI – Southern Building Code Congress International, Inc.
SES – sustainable energy standard
SHGC – Solar Heat Gain Coefficient
SSPC – Standing Standards Project Committee
VA – U.S. Department of Veterans Affairs

Energy Codes Overview

Federal Energy Policy Act (EPAC) Passed in 1992

EPAC requires:

- review for compliance with the residential Model Energy Code & adoption of commercial building code
- Most common codes are Model Energy Code (MEC) for residential and American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE)

Energy Code Overview

What's going on nationally?

Commercial:

- 29 States have adopted ASHRAE 90.1 or more stringent
- 22 States have no code or less stringent than ASHRAE 90.1

Residential:

- 19 State meets or exceeds 95 MEC
- 13 State meets 93 or 92 MEC
- 19 States have no code or weaker than 92 MEC

Energy Code Overview

Statewide codes have not been considered in Arizona

Existing local codes include:

- Pima County & City of Tucson
- Sustainable Energy Standard
- State of Arizona Department of Administration - *State buildings to ASHRAE standards*

Commercial Energy Building Standards

American Society of Heating, Refrigerating and Air
Conditioning Engineers (ASHRAE)

- Publishes first commercial energy standard in 1975
- ASHRA Revisions in 1980, 1989 and 1999
- Board Passed Revision in June 1999
- Standard must now be approved by IES and ANSI
- Challenges Made by Environmental Groups and Gas Industry

Commercial Energy Building Standards

Major Provisions of the 1999 ASHRAE standard:

2

- * Targets savings of at least 20% over 90.1-1989
- * Written in code language
- * Attempt to make the standard easier to use
- * Consideration given to both heating and cooling
- * Covers: building envelope, HVAC systems, water heating, lighting and other equipment

Commercial Energy Building Standards

International Energy Conservation Code (IECC) Goals

1. Adequately conserve energy
2. Do not unnecessarily increase construction costs
3. Do not restrict the use of new materials, products or methods
4. No preferential treatment to materials, products or methods

Model Energy Code

- Purpose:
 - Enable the effective use of energy in new building construction.
 - Residential buildings
 - Refers to ASR EA 90.1-1989 for non-residential

Model Energy Code

- The Model Energy Code (MEC) regulates:
 - Thermal resistance of the building envelope.
 - Air leakage.
 - Design and selection of mechanical, electrical, water-heating and lighting systems and equipment.

Model Energy Code

- Building envelope requirements are based on Heating Degree Days.
 - Issue in cooling climates
- Air leakage (.5 Air Changes Per Hour)
- Equipment standards use federal efficiency standards.

Model Energy Code

Compliance methods

- Systems Analysis (chapter 4)
 - Does this home use the same or less purchased energy than a home design using the Component Performance approach.
- Component Performance (chapter 5)
 - Each component (wall, attic, floor) must meet a specific level (U-value).
- Acceptable Practice (chapter 6)
 - Lists building practices can be used to meet the Component Performance values.

Model Energy Code

Construction in Arizona

- Low desert exceeds MEC standards.
- High desert at MEC standards.
- Mountain areas below MEC standards.

Questions to Consider

- Will adoption of codes save energy?
- What are today's building practices?
- How have codes impacted other states?
- How do you modify codes to be effective for warm weather climates?
- What is administrative burden of adopting codes?
- How do we update codes when revisions are completed?



• B C A P •

Building Codes Assistance Project

Accelerating Implementation of Building Energy Codes

Attachment

Status of State Energy Codes

September/October 1999

NEW THIS ISSUE...

- NY bill funds energy code upgrade.
- MA adopts new commercial code based on ASHRAE 90.1-R, IECC, and state-specific elements.
- MO creates a commission to study the implementation and financing of a statewide building code.
- Philadelphia adopts 98 IECC.

ALABAMA

Residential Energy Code: Residential Energy Code for Alabama (RECA), a state developed code equivalent to 93 MEC, contingent upon local adoption.

Commercial Energy Code: No statewide commercial energy code, except for state-owned or funded buildings, which must comply with ASHRAE/IES 90.1.

RECA has not been adopted by any local jurisdictions since its adoption by the Residential Energy Code Board in 1996. AL is depending on its HERS program to help encourage voluntary energy-conservation measures throughout the state.

Dept. of Econ. & Comm. Affairs: www.adeca.state.al.us

ALASKA

Residential Energy Code: State developed code, BEES, exceeds 95 MEC, mandatory for state funded residential construction (prevalent in Alaska).

Commercial Energy Code: None.

More than two years ago a Technical Advisory Committee made its final recommendation to proposed changes in the residential energy code—Building Energy

Efficiency Standards (BEES). There has yet to be any public review of the recommendations.

AK DOE: www.comregaf.state.ak.us/doehome.htm
AK Housing Finance Corp: www.ahfc.state.ak.us/

ARIZONA

Residential Energy Code: None statewide.

Commercial Energy Code: None, except for state owned facilities, which must comply with ASHRAE/IES 90.1.

An energy codes study committee is being formed to review the 98 IECC and relevant state energy codes to determine a beneficial energy code for use statewide. The committee must submit its findings to the Governor and legislature by December 1, 1999. Pima County & the City of Tucson have adopted a sustainable energy standard (SES) based on the 95 MEC. SEScheck, a version of MECcheck is available for code compliance.

Energy Office: www.commerce.state.az.us

OTHER NEWS...

- ⇒ **SAVE THE DATE!** Final Hearings on the Energy Chapter of the IRC (International Residential Code) are SEPT. 12-17 in St. Louis, MO. Check the back for details.
- ⇒ Remember! DOE has numerous resources available to assist states in the adoption and enforcement of energy codes.
- ⇒ **MECcheck & COMcheck energy code compliance materials can be downloaded for FREE** from DOE's website. All state-specific software versions are also available at: www.energycodes.org.
- ⇒ **ORDER COPIES OF THE 98 IECC or MEC FROM BOCA, SBCCI, or ICBO.**

Read on for more details on these and other energy code issues.

ARKANSAS

Residential Energy Code: State developed code, equivalent to 92 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

Energy code adoption is one consideration for local jurisdictions in the AR Communities of Excellence Program. Eleven energy code resource centers are located in public libraries throughout the state. State received DOE/SEP FY98 grant to further code implementation measures.

CALIFORNIA

Residential Energy Code: State developed code, Title 24, exceeds 95 MEC, mandatory statewide.

Commercial Energy Code: State developed code, Title 24, meets or exceeds ASHRAE/IES 90.1, mandatory statewide.

Revised standards for the state energy code went into effect July 1, 1999. New requirements include NFRC labeling for SHGC and reduced lighting power densities in nonresidential buildings. **The Energy Commission has approved three computer programs to simplify performance-based code compliance.** CA's HERS program will be providing field verification and diagnostic testing to ensure compliance with new duct efficiency and envelope leakage measures in the code. These measurements may be used as compliance credits towards meeting HERS requirements. The state received DOE/SEP FY99 grant for a builder training program in cooperation with Nevada.

CA Energy Standards: www.energy.ca.gov/98standards
List of Approved Computer Programs:
www.energy.ca.gov/efficiency/computer_prog_list.html

COLORADO

Residential Energy Code: State provisions that do not meet 92 MEC, mandatory only in jurisdictions that adopt a building code (approximately 70% of the State).

Commercial Energy Code: Voluntary state provisions based on ASHRAE/IES 90.1.

Ft. Collins, Denver & other local jurisdictions have adopted modified 95 MEC & ASHRAE 90.1. Approximately 12 jurisdictions have adopted the commercial standards thus far. Colorado version of COMcheck is available online. **The American Institute of Architects has produced guidelines for a modified ASHRAE 90.1 for CO.** Colorado's voluntary Build Green program has resulted in 4000 new homes being built at or above 93 MEC. State received DOE/SEP FY98 funding to promote construction of MEC

equivalent or better building practices in local jurisdictions.

Energy Conservation Office: www.state.co.us/oec/

CONNECTICUT

Residential Energy Code: 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

Effective May 1, 1999, state adopted and implemented 96 BOCA codes, including 95 MEC and ASHRAE 90.1 with state supplements. **MECcheck and COMcheck are available in CT for easy code compliance.** DOE has extended CT's training grant and training will continue for building designers and officials through mid-2000. Training is predominantly on the new commercial code and COMcheck.

CT Office of Policy & Mgt: www.opm.state.ct.us/

DELAWARE

Residential Energy Code: 93 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

State received DOE funds to develop a model energy audit tool specifically designed to help low and moderate income homebuyers qualify for EEMs. State received DOE grant to implement HERS program.

DISTRICT OF COLUMBIA

Residential Energy Code: ASHRAE 90A-1980 and 90B-1975 with city amendments, mandatory districtwide

Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975 with city amendments, mandatory districtwide

The proposed rule to adopt the 96 BOCA code... (including 95 MEC & ASHRAE/IES 90.1) was published in DC Register on April 2; **outcome of the final rule should be decided in October.** A District-specific energy code compliance manual is now available. District received DOE/SEP FY98 grant to implement MEC and ASHRAE 90.1.

Dept. of Consumer & Reg. Affairs: www.dhra.org/

FLORIDA

Residential Energy Code: State developed code, FEECBC, exceeds 95 MEC, mandatory statewide.

Commercial Energy Code: State developed code, meets or exceeds ASHRAE/IES 90.1, mandatory statewide.

State building commission is updating a statewide uniform code to send to the legislature in spring 2000. The energy code will be the 1997 Florida Energy Efficiency Code for Building Construction (FEECBC) with 1998 revisions. State received DOE/SEP FY98 grant to improve commercial code implementation. A commercial code software program is being developed.

FEECBC:
www.dca.state.fl.us/fhcd/programs/eeccb/index.htm

GEORGIA

Residential Energy Code: 95 MEC with supplements, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

Commercial code training recently finished. Effective 10/97, state modified residential energy code to eliminate slab edge insulation requirements due to possible termite infestations. Lack of insulation must be traded off with other envelope requirements, and prescriptive package requirements have been strengthened to account for lack of slab insulation.

Dept of Community Affairs: www.dca.state.ga.us

HAWAII

Residential Energy Code: State developed voluntary code, for low-rise multi-family only, that exceeds 95 MEC.

Commercial Energy Code: ASHRAE/IES 90.1 with modifications; adopted by all counties except Maui.

When the County of Maui adopts ASHRAE 90.1, all counties in HI will have an energy code for commercial and high-rise new construction. State completed a commercial energy code implementation/compliance study that determined code compliance at about 87%. State's energy code and compliance materials are posted at Energy Division website.

Energy Division: www.hawaii.gov/dbedt/ert/ebranch.html

IDAHO

Residential Energy Code: State developed code, less stringent than 92 MEC, mandatory statewide. 95 MEC mandatory for all state-owned buildings.

Commercial Energy Code: ASHRAE 90A-80 and 90B-1975 for state owned buildings. **State developed Idaho Commercial Building Energy Code (ICBEC), based on ASHRAE 90.1, voluntary statewide.**

3 jurisdictions have already adopted the ICBEC and 3-4 more are expected to adopt this winter. ICBEC training & support is available. The code and compliance

guide are online. 30 jurisdictions have adopted the 95 MEC for residential buildings. State officials are continuing outreach programs to encourage code adoption in local jurisdictions. Currently, builder self-certification is required if local jurisdictions do not enforce a residential energy code.

Energy Office: www.idwr.state.id.us/idwr/energy/

ILLINOIS

Residential Energy Code: None.

Commercial Energy Code: State owned buildings and city-owned buildings in Chicago must comply with ASHRAE 90.1-1989.

The City of Chicago has established a building codes committee to review the adequacy of current codes and needs for improvement.

INDIANA

Residential Energy Code: 92 MEC, with state amendments, mandatory statewide.

Commercial Energy Code: State developed code that does not meet ASHRAE/IES 90.1, mandatory statewide.

In the summer of 1998, the state HBA initiated talks on upgrading the state energy code to the 98 IECC. Code training sessions are scheduled upon demand.

Office of the State Building Commissioner:
www.state.in.us/sema/osbc_staff.html

IOWA

Residential Energy Code: 92 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

Iowa's energy code education program is progressing. Building official training has concluded and training sessions are now being developed for Iowa home-builders. State received DOE/SEP FY98 funding to develop training manuals and further market energy efficiency and codes. In 1997, attempts to remove basement insulation requirements from the residential energy code and to severely limit the application of the 92 MEC in Iowa were defeated.

Iowa Energy Bureau: www.state.ia.us/dnr/energy

KANSAS

Residential Energy Code: 93 MEC or energy-efficiency disclosure form, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

ASHRAE 90.1 and COMcheck training is ongoing throughout the state. State is circulating a brochure that offers tips for buying an energy-efficient home. State received DOE/SEP FY98 funding to further implement residential and commercial energy codes. **Grant money is also being used for lender and real estate training on energy-efficient mortgages and for general public education in hopes of increasing market demand for energy-efficient homes.**

KCC: www.kcc.state.ks.us/energy/energy.htm
Energy-Efficient Home Brochure:
www.oznet.ksu.edu/dp_nrgy/Nrgypubs.htm

KENTUCKY

Residential Energy Code: 92 MEC, mandatory statewide.
Commercial Energy Code: ASHRAE 90A-1980 & 90B-1975, mandatory statewide.

State plans to hold MECcheck seminars around KY this year. Kentucky will be participating with other southern states in a DOE funded residential energy efficiency project, aimed at better implementing energy codes.

LOUISIANA

Residential Energy Code: 95 MEC for low-rise multi-family only, mandatory statewide.
Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

The state's Commercial Building Energy Conservation Code (ASHRAE/IES 90.1) went into effect January 1, 1999 and covers all commercial and multi-family residential construction greater than three stories. 95 MEC was adopted for all multi-family construction three stories or less. State began a home energy loan program & has established a hotline for code support. State received DOE/SEP FY98 grant to build support for residential energy code adoption at the local level.

Energy Section:
www.dnr.state.la.us/sec/execdiv/energy.ssi

MAINE

Residential Energy Code: State developed code, less stringent than 92 MEC, mandatory statewide.
Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

The State Planning Office may reestablish a Model Municipal Building Code Task Force for the purpose of developing a model municipal building code(s). Last legislative session, the Task Force concluded that it was both feasible and desirable that a model building code be developed and made available for voluntary local

adoption. **Maine recently accepted bids for a DOE funded study of the state's building code. A contractor has been chosen and work will begin this fall.**

Code Program: www.state.me.us/spo/ceo/ceohome.htm

MARYLAND

Residential Energy Code: 95 MEC or its equivalent approved by Dept. of Hsg & Community Dev (DHCD) mandatory statewide.
Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

In May 1999, state altered the time period from 9 to 24 months within which the DHCD must incorporate subsequent versions of the BOCA Code into the Maryland Building Performance Standards (MBPS). MBPS adoption by counties was extended from 8/1/99 to 8/1/01. State received DOE/SEP FY98 grant further develop comprehensive codes training program.

DHCD: www.dhcd.state.md.us

MASSACHUSETTS

Residential Energy Code: 95 MEC with amendment mandatory statewide.
Commercial Energy Code: ASHRAE/IES 90.1 and additional state developed codes, mandatory statewide.

MA adopted a new commercial energy code July 13, 1999. The new state developed code is based on ASHRAE 90.1-R, IECC, and state-specific elements. can be viewed on the Board of Building Regulations & Standards web site. It will be mandatory throughout the state beginning Jan. 2001. Provisions requiring a maximum of U=0.44 for residential replacement windows and NFRC labeling of all fenestration products took effect 1/1/99. The state received DOE/SEP 99 funding for residential code training and an impact analysis of the residential code.

BBRS page: www.state.ma.us/bbrs/
Energy Resources Div: www.state.ma.us/doer/home.htm

MICHIGAN

Residential Energy Code: State developed code based on ASHRAE 90A-80 & 90B-75, mandatory statewide.
Commercial Energy Code: ASHRAE 90A-80 and 90B-75, mandatory statewide.

Michigan's Uniform Energy Code took effect March 31, 1999. It is marginally more energy efficient than ASHRAE 90A and 90B, but weaker than 92 MEC. State has posted efficiency recommendations online for new homes along with a link to five star builders in the state.

Energy Code: www.migov.state.mi.us/rules/96/1020
Energy Resources Div:
www.cis.state.mi.us/opla/erd/home.htm

MINNESOTA

Residential Energy Code: State developed code, exceeds 95 MEC, mandatory statewide (effective 4/15/00).
Commercial Energy Code: State amended version of ASHRAE/IES 90.1, mandatory statewide.

MN's new energy codes are more stringent than the 95 MEC and for the first time include requirements for installation of mechanical ventilation in all new housing. **The Dept. of Commerce provides online energy code training information for residential contractors and residential & commercial compliance software.** MN received FY99 DOE/SEP funding to evaluate the effectiveness of MN's new energy codes and to identify ways to increase demand among homebuyers for energy-efficient housing.

Dept. of Public Service: www.dpsv.state.mn.us
Dept of Commerce:
www.commerce.state.mn.us/Education/bccont.htm
Building Codes and Standards Division:
www.state.mn.us/ebranch/admin/buildingcodes/education.html

MISSISSIPPI

Residential Energy Code: ASHRAE 90-1975.
Commercial Energy Code: ASHRAE 90-1975, mandatory for state owned buildings, public buildings, and high rise buildings.

State legislation to adopt current national energy standards died in 1995; an attempt to adopt commercial standards (ASHRAE/IES 90.1) died in 1997. State received DOE/SEP FY98 funding to develop a regional training and technical assistance program for energy codes. Mississippi is working with AL, GA, KY, NC, and TX on this.

MISSOURI

Residential Energy Code: None.
Commercial Energy Code: None, except state owned buildings must comply with ASHRAE/IES 90.1.

The MO General Assembly created a building code commission to study possible implementation of a building code and to develop an administrative framework and funding method for the code. The committee must submit its findings to the Governor and legislature by December 1, 1999. Previous legislation to adopt a statewide building code died in the 1994 and 1996 legislative sessions. Although the state

has no mandatory energy codes, St Louis has adopted the 95 MEC and Kansas City the 92 MEC.

Div. of Energy: www.dnr.state.mo.us/de/homede.htm

MONTANA

Residential Energy Code: 93 MEC with state amendments, mandatory statewide for jurisdictions that adopt codes.
Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide, for jurisdictions that adopt codes.

The state received FY97 DOE/SEP funding for workshops and builder assistance to increase cost-effective energy-efficient building practices. **COMcheck workshops will be held in Helena, Bozeman and Kalispell in October.**

NEBRASKA

Residential Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.
Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

On May 5, 1999, the Governor signed into law legislation adopting the 98 IECC for all state-owned and state-funded buildings, effective Jan. 1, 2000 (LB 755). State received DOE/SEP FY98 grant to further provide incentives to increase awareness of building above 95 MEC, and to incorporate these standards into new affordable housing units.

Energy Office: www.nol.org/home/NEO/
LB 755: www.unicam.state.ne.us/Bills_old.htm#introduced

NEVADA

Residential Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.
Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975; state owned facilities must comply with ASHRAE/IES 90.1.

City of Reno and Lyon County require 95 MEC. North Las Vegas, Las Vegas, Henderson, Mesquite and Boulder City enforce 92 MEC. The SEO worked with Reno to incorporate home energy ratings as a compliance option for 95 MEC. Other jurisdictions have agreed to follow suit. Legislation to adopt 92 MEC statewide died with adjournment of the 1995 legislative session. State will work with AZ and UT on implementing the adoption and enforcement of MEC, as well as promoting efficiency standards exceeding 95 MEC.

NEW HAMPSHIRE

Residential Energy Code: Modified 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

NH's statewide residential energy code based on 95 MEC went into effect Feb. 1, 1999. The energy code, NHcheck software, and code training notices are available online. This year, energy code workshops have been held for architects, code officials, builders, HVAC contractors, technical college building program students, building products representatives and others. The Governor's Office of Energy and Community Services received FY97 DOE/SEP funding for training and technical assistance.

NH PUC: www.puc.state.nh.us/energypg.html

NEW JERSEY

Residential Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

State has formed a committee to review the NJ energy code. The latest edition of BOCA has traditionally been adopted as a statewide code unamended. However, 1996 legislation allowed the Department of Community Affairs (DCA) to exclude provisions of the new codes. DCA adopted 96 BOCA, amended to exclude 95 MEC.

NEW MEXICO

Residential Energy Code: 92 MEC with state amendments, mandatory statewide.

Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide; ASHRAE/IES 90.1 for state-funded buildings.

NM's residential energy code and worksheets are available online. Possible adoption of the commercial code, ASHRAE/IES 90.1, has stalled in the Construction Industries Commission.

Energy Programs:
<http://www.emnrd.state.nm.us/ecmd/html/programs.html>

NEW YORK

Residential Energy Code: State developed code that nominally meets 92 MEC, mandatory statewide.

Commercial Energy Code: State developed code that nominally meets ASHRAE/IES 90.1.

An agreement on the Governor's Budget Bill was reached July 29, 1999, allocating funding for energy

code upgrades. The bill calls for the mandatory statewide adoption of an energy code to be developed by DOS and submitted for approval to the NY Codes Council. State received DOE/SEP FY97 grant, through NYSERDA, to develop a training and education program on code standards with MA and VT. NY-DOS also received, with NYSERDA, FY98 SEP grant to prepare the rulemaking. DOS is looking at the 98 IECC as the model for the energy code upgrade.

Codes Divn: www.dos.state.ny.us/code/ls-codes.html

NORTH CAROLINA

Residential Energy Code: State developed code, a simplified version of 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1 with state provisions, mandatory statewide.

North Carolina is participating in the Multi-State Commercial Code Project to improve commercial energy codes. The residential code is available online.

Energy Code: www.ncdoi.com/Ncfr/

NORTH DAKOTA

Residential Energy Code: 93 MEC, contingent on local jurisdiction adoption.

Commercial Energy Code: ASHRAE/IES 90.1, contingent on local jurisdiction adoption.

In May, a statewide code compliance study determined that all newly built homes in the study met or surpassed 93 MEC. Teachings on the MEC and energy-efficiency measures have been incorporated into vocational education.

OHIO

Residential Energy Code: 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

The Ohio Board of Building Standards (OBBS) adopted 96 BOCA (including 95 MEC), effective March 1, 1999. State received FY97 DOE/SEP funding to train builders to build to an overall higher standard of construction, including efficiency.

Office of Energy Efficiency: www.odod.ohio.gov/cdd/oeef/

OKLAHOMA

Residential Energy Code: 95 MEC, mandatory for jurisdictions that do not adopt their own code and for state owned and leased facilities.

Commercial Energy Code: ASHRAE/IES 90.1 for all state owned and leased facilities.

State contractor licensing requires compliance with BOCA codes for some trades; the 1996 International Mechanical Code, which references 95 MEC, took effect in August 1996 and is the minimum installation standard statewide for mechanical contractors. Effective 6/1/97, the State Fire Marshal's Office made 96 BOCA (including 95 MEC) mandatory for jurisdictions without codes and for state facilities. State received DOE/SEP FY98 grant to increase awareness of energy standards.

OREGON

Residential Energy Code: State developed code, exceeds 95 MEC by 20-30%, mandatory statewide.

Commercial Energy Code: State developed code, exceeds ASHRAE/IES 90.1 by 5%, mandatory statewide.

Office of Energy holds energy code training with assistance from the Northwest Energy Efficiency Alliance. State received DOE/SEP FY98 grant to expand code compliance reviews and update compliance materials. Oregon has produced state-specific software and compliance manuals.

Office of Energy, Building Energy Codes:
www.cbs.state.or.us/external/oeec/cons/ecode1.htm

PENNSYLVANIA

Residential Energy Code: State developed code, Act 222, based on ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

The Senate is considering a bill to adopt 96 BOCA codes (including 95 MEC and ASHRAE 90.1). A companion bill has been introduced in the House. Similar legislation passed the House in 1996 but died in the Senate appropriations committee leaving Act 222 as the prevailing energy code. **In March, Philadelphia, one of 3 jurisdictions exempt from state building codes, adopted the 98 IECC.**

RHODE ISLAND

Residential Energy Code: 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

RI is involved with a regional effort to implement up-to-date and region-specific energy codes. State received DOE/SEP FY98 grant to improve localized energy code enforcement and training.

SOUTH CAROLINA

Residential Energy Code: 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

The Governor signed a statewide building code bill in 1997 that mandates the 97 SBCCI and 95 MEC codes. State received DOE/SEP FY98 grant to further educate the building community on 95 MEC requirements and uniform enforcement procedures.

Energy Office: www.state.sc.us/energy

SOUTH DAKOTA

Residential Energy Code: None.

Commercial Energy Code: None.

There are no plans to adopt statewide energy standards.

TENNESSEE

Residential Energy Code: 92 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

TN has been in initial planning stages for energy code training as part of a multi-state DOE/SEP grant. TN is working with other southern states on updating the commercial code.

TEXAS

Residential Energy Code: None, except for (low-rise) state owned or funded buildings, which must comply with 93 MEC.

Commercial Energy Code: None, except for state owned buildings and state supported institutions which must comply with a modified ASHRAE/IES 90.1.

This spring, the State Energy Conservation Office (SECO) received a DOE/SEP grant to look into enhancements to model code to make it more suitable for Texas, and then to promote adoption of the code at the local level. Local jurisdictions in Texas adopt their own energy codes.

SECO: www.gsc.state.tx.us/energy/energy.html

UTAH

Residential Energy Code: 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

95 MEC replaced 93 MEC as the residential energy code, effective July 1, 1998. State received DOE/SEP FY98 grant to work with AZ and NV on implementing the adoption and enforcement of MEC, as well as promoting efficiency standards exceeding 95 MEC. Participation in Utah's Energy Rated Homes program is growing at an estimated 150% annually.

Energy Rated Homes of Utah: info@utahenergy.org

VERMONT

Residential Energy Code: State developed code, exceeds 95 MEC by 5%, mandatory statewide.

Commercial Energy Code: State developed code, meets or exceeds ASHRAE/IES 90.1, mandatory for approximately 50% of construction through land use regulations, Act 250.

State is developing a commercial energy code that will be more energy efficient than ASHRAE 90.1. Technical review meetings were ongoing throughout the summer. Updates on the code are posted online. **The residential energy code is being updated in 1999 and a Code Update Advisory Committee is currently considering proposed amendments. Under consideration is a controlled mechanical ventilation standard.** Residential energy code compliance materials including a VT version of MECcheck are available online. A residential energy code assistance hotline is available for questions.

Dept of Public Service: www.state.vt.us/psd/
Energy Rated Homes of VT: www.erhvt.org

VIRGINIA

Residential Energy Code: 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1, mandatory statewide.

As of April 1998, all construction is to comply with 95 MEC. Code training is handled through local BOCA chapters.

WASHINGTON

Residential Energy Code: State developed code, exceeds 95 MEC for electrically heated buildings but less stringent for nonelectrically heated buildings.

Commercial Energy Code: State developed code that meets or exceeds ASHRAE/IES 90.1, mandatory statewide.

State completed whole house ventilation study, summary of which is available on State Energy Programs web site. Last year, the Building Code Council made minor changes to the residential &

commercial codes, including an update for skylights to include NFRC ratings. State received FY99 DOE/SEP grant in part to update its code curriculum. State received DOE/SEP FY98 grant to study barriers to energy-efficient building measures; study is ongoing.

Wash State Energy Programs: www.energy.wsu.edu

WEST VIRGINIA

Residential Energy Code: ASHRAE 90A-1980 and 90B-1975.

Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975.

State received DOE/SEP grant for commercial energy code training based on the 98 IECC. Workshops are planned for October and will target architects, engineers and code officials. 96 BOCA was adopted without 95 MEC in March 1997. The Fire Marshal's Office has indicated that the energy standards will be reviewed when the next BOCA codes are available in the year 2000.

Energy Efficiency Program: www.wvdo.org/community/eep.htm

WISCONSIN

Residential Energy Code: State developed code (COMM 22), meets or exceeds 95 MEC, mandatory statewide.

Commercial Energy Code: ASHRAE/IES 90.1 with state modifications (COMM 63), mandatory statewide.

The Commercial Building Energy Committee is reviewing the 98 IECC for possible adoption in Wisconsin. Training for designers, contractors and building owners on the lighting portion of the current commercial code is planned for early December. Wisconsin's Uniform Building Code went into effect May 1, 1999. Residential and commercial code training has been provided for over 2000 builders, architects and code officials. DOE funding was and is used to supplement the cost of many of the workshops and to create a state version of MECcheck (WIScheck).

WI Energy Bureau: www.doa.state.wi.us/deir/boe.htm
Building Code: www.legis.state.wi.us/rsb/code/comm/

WYOMING

Residential Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

Commercial Energy Code: ASHRAE 90A-1980 and 90B-1975, mandatory statewide.

In July 1998, the state eliminated the Division of Economic & Community Development, which handled code and related building efficiency issues. The Wyoming Energy Council is now handling code issues. The Council

is currently undertaking a Home Energy Rating Program with primarily Energy Office funding.

Energy & Conservation: commerce.state.wy.us/decd/weco-fs.htm

BACKGROUND ON ENERGY CODES

The most recent nationally recognized residential building energy code is the 1998 International Energy Conservation Code (IECC). The code applies to all new residential and commercial construction. The bulk of the IECC applies to single-family homes and multi-family residences that are 3 stories or less. In addition, Chapter 7 of the IECC provides an easy to follow commercial energy code that applies to simple commercial buildings. For more complex commercial buildings, ASHRAE/IES Standard 90.1-1989 is referenced.

BUILDING ENERGY CODES ARE PART OF EPAct:

The National Energy Policy Act (EPAct), signed into law by President Bush in 1992, referenced the 1992 CABO MEC as the energy-efficiency standard to be used for new residential construction. EPAct required states to determine if it was appropriate to revise their residential energy codes to meet or exceed the 92 MEC. Additionally, EPAct required Federal mortgage lenders to assure that homes using their products comply with at least the 92 MEC. Subsequently, the US Department of Energy (US DOE) determined that the 93 MEC and then the 95 MEC provided greater energy efficiency for residential buildings and required states to consider adopting the later version.

The 95 MEC is presently the baseline for EPAct until the Department of Energy makes a determination that the 98 IECC is the most energy-efficient standard. The determination is expected this year.

EPAct also requires that states adopt ASHRAE/IES Standard 90.1-1989, or equivalent, as the statewide energy code for commercial and multi-family residential buildings that are 4 stories and higher. As of July 1999, 30 states have complied. Also note that the 1998 IECC, 1995 MEC and 1993 MEC reference ASHRAE/IES 90.1 for commercial buildings.

DOE REGIONAL SUPPORT OFFICES

Atlanta, GA.....Traci Leath.....(404) 347-0236
traci.leath@hq.doe.gov
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Seattle, WA.....Carole Gates.....(206) 553-1165
carole.gates@hq.doe.gov

DOE's ENERGY CODE HOTLINE is 1-800-270-CODE.

CODE-RELATED GROUPS

ASHRAE www.ashrae.org
Manager of Standards
1791 Tullie Circle, NE
Atlanta, GA 30329-2305

BOCA www.bocai.org
4051 West Flossmoor Road
Country Club Hills, IL 60478-5795

ICBO www.icbo.org
5360 Workman Mill Road
Whittier, CA 90601

ICC www.intlcode.org
5203 Leesburg Pike, Suite 708
Falls Church, VA 22041

NCSBCS www.ncsbcs.org
505 Huntmar Park Dr, Suite 210
Herndon, VA 22070

NFRC www.nfrc.org
1300 Spring Street, Suite 120
Silver Spring, MD 20910

SBCCI www.sbcci.org
900 Montclair Road
Birmingham, AL 35213-1206

NEEP (Northeast Energy Efficiency Partnerships)
slote@sover.net or www.neep.org

NEEA (Northwest Energy Efficiency Alliance)
www.nwalliance.org

INTERESTED IN DEPRESSURIZATION ISSUES?

Join the GotVents E-Discussion Group!

BCAP has begun an email dialogue about depressurization issues, as they relate to residential buildings, related ventilation issues, and the shortcomings of current building codes in addressing these issues. Ideas gained from this dialogue will be presented to the ICC with the hope of altering building or energy codes so that they better address current depressurization and ventilation problems. To get involved, email Brad Belo at bbelo_bcaphq@ase.org.



• B C A P •

Building Codes Assistance Project

The Building Codes Assistance Project provides custom-tailored assistance on building energy code adoption and implementation. We assist state and local regulatory and legislative bodies and help coordinate others representing environmental interests, consumers, labor, and industry.

BCAP helps those states that request assistance, and because the U.S. Department of Energy and the Energy Foundation fund us, our services are available at no cost.

The project is a joint initiative of the Alliance to Save Energy, the American Council for an Energy-Efficient Economy, and the Natural Resources Defense Council. BCAP is structured to quickly deliver assistance where it is needed most - at the state or local level where construction regulation works.

CONTACT INFORMATION

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ACRONYMS USED IN UPDATE:

ASHRAE:	American Society of Heating, Refrigerating and Air Conditioning Engineers.
BOCA:	Building Officials and Code Administrators International, Inc.
CABO:	Council of American Building Officials.
DOE/SEP:	US Department of Energy/ State Energy Program.
HBA:	Home builders association.
HUD:	US Department of Housing & Urban Development.
HERS:	Home Energy Rating System.
HVAC:	Heating, ventilating, and air conditioning.
ICBO:	International Conference of Building Officials.
ICC:	International Code Council.
IECC:	International Energy Conservation Code.
IES:	Illuminating Engineering Society of North America.
IRC:	International Residential Code.
MEC:	Model Energy Code.
NFRC:	National Fenestration Rating Council.
PNNL:	Pacific Northwest National Laboratory.
SBCCI:	Southern Building Code Congress International.
SC:	Shading coefficient
SEO:	State energy office.
SHGC:	Solar heat gain coefficient.

WHAT'S HAPPENING WITH ENERGY EFFICIENCY A THE ICC CODE HEARINGS THIS MONTH:

Final hearings on the International Residential Code (IRC) will be at the International Codes Council (ICC) Codes Forum in St. Louis, MO. this September 12-17. Code officials must be present to cast their votes for energy efficiency.

The 1998 MEC, now re-named the International Energy Conservation Code (IECC), was developed by the ICC as part of its 'family of codes'. In developing the energy chapter of the new International Residential Code (IRC), the ICC leadership stated that its standards needed to be equivalent to the IECC.

Contrary to this, a much weaker energy chapter was drafted by the IRC committee. Promulgation of this draft would create two separate and unequal energy codes within the ICC codes. At energy code hearings in April, America's building code officials voiced their support for energy efficiency when they voted to overturn the IRC draft proposal that would have weakened the energy code. Instead, code officials adopted 2 related proposals presented by the Alliance to Save Energy calling for:

- The creation of a new, simplified chapter 8 for single-family buildings in the IECC (proposal EC-74)
- Replacement of the IRC energy chapter with an exact replica of the new IECC chapter 8 (proposal RE-3)

This is in keeping with the ICC's call for equivalent energy standards.

Code officials at the April hearings praised the new IECC chapter 8 as a simple, easy-to-understand option that will make the IECC much easier to teach and enforce. Placing the same requirements in the IRC will create a new uniform, simplified compliance option for code officials across the country.

* For more information on the Annual Conference, contact BOCA, ICBO, SBCCI, or the ICC.

* For more information on the IRC and IECC proposals contact Bill Prindle of the Alliance to Save Energy at bprindle@ase.org or (202) 530-2214.

To receive an email version of the Status of State Energy Codes report, contact Brad Belo at bbelo_bcap@ase.org. This report is also posted on BCAP's web site at www.crest.org/efficiency/bcap.

This report was published on September 1, 1999. Bold text indicates changes from the July/August 1999 report. Next report: November 1, 1999.



• B C A P •

Building Codes Assistance Project

Accelerating the Implementation of Building Energy Codes

ARIZONA STATE LEGISLATURE

Interim Meeting Notice

Open to the Public

ENERGY EFFICIENCY CODES STUDY COMMITTEE

DATE: Wednesday, December 15, 1999

TIME: 1:00 P. M.

PLACE: Senate Appropriations Room

AGENDA

1. Call to Order
2. Presentation by Arizona Department of Commerce Energy Office
3. Discussion
4. Recommendations
5. Adjourn

Members:

Senator David A. Petersen, Co-Chair
Senator Gus Arzberger
Senator Tom Freestone

Representative James P. Weiers, Co-Chair
Representative Marilyn Jarrett
Representative Andy Nichols

Ms. Sarah Cramer
Mr. Dick Foreman
Mr. Joseph Franquero
Mr. Douglas Hood
Mr. Vincent Hunt
Mr. Fred King
Ms. Karen Krause

Mr. Chris Mathis
Mr. Denny Miller
Ms. Amanda Ormand
Mr. Gary Scaramazzo
Mr. Ric Stephenson
Mr. Jerry Thieken
Ms. Connie Wilhelm-Garcia

BL/mn
11/29/99

ARIZONA STATE LEGISLATURE
Forty-fourth Legislature – First Regular Session

ENERGY EFFICIENCY CODES STUDY COMMITTEE

Minutes of Meeting
Wednesday, December 15, 1999
Senate Appropriations Room – 1:00 p.m.

(Tape 1, Side A)

The meeting was called to order at 1:15 p.m. by Co-Chairman Weiers. The attendance was noted by the secretary.

Members Present

Senator Peterson, Co-Chairman

Representative Weiers, Co-Chairman

Ms. Sarah Cramer
Mr. Dick Foreman
Mr. Joseph Franquero
Mr. Douglas Hood
Mr. Vincent Hunt
Mr. Fred King
Ms. Karen Krause

Mr. Chris Mathis
Mr. Denny Miller
Ms. Amanda Ormand
Mr. Gary Scaramazzo
Mr. Ric Stephenson
Mr. Jerry Thieken
Ms. Connie Wihelm-Garcia

Members Absent

Senator Arzberger
Senator Freestone

Representative Jarrett
Representative Nichols

DISCUSSION

Co-Chairman Weiers began the discussion by stating that he is a conservative and believes that the government should not be involved with the energy efficiency codes unless it is absolutely necessary.

Co-Chairman Weiers asked Amanda Ormand to explain what the state of Oregon is doing as far as incentive programs. Ms. Ormand responded that Oregon is including alternative vehicles, residential and commercial structures in their tax incentive programs. She added that they have specific lists of what qualifies and what doesn't for the tax incentive. Ms. Ormand informed members that Oregon has been giving these energy efficiency tax credits for several years and stated that this program has been successful. She iterated that there is an incentive cap of \$14 million per year.

Co-Chairman Weiers queried Ms. Ormand if Oregon has reached the \$14 million cap. She responded in the affirmative. Co-Chairman Weiers stated that the incentive program is working when the cap is bumped.

Co chairman Weiers explained that he did not want to mandate anything and suggested that the Committee split up into smaller work groups. A document listing all of the suggested work groups was given to members (Attachment 1).

Without objection, the meeting adjourned at 1:25 p.m.

Gina Kash, Committee Secretary

(Original minutes, attachments, and tape are on file in the Chief Clerk's Office. Copy on file with Senate Secretary.)

GK
12/16/99

Energy Efficient Codes Study Committee

Energy Office Code Work Group
Recommendations

December 15, 1999

Energy Efficient Codes Study Committee

Form three work groups to decide details of
Arizona Program:

- Incentives Work Group
- Residential Work Group
- Compliance Work Group

Incentives Work Group

- Incentives could be in the form of rebates or tax credits.
- Incentives could be based on a climate specific target (% or rating) above the residential and commercial standards.
- Using % above an existing standards would allow for the use of existing compliance tools.

Incentives Work Group

- Several states have incentives for energy efficiency commercial and residential buildings.
- Oregon has a comprehensive Business Energy Tax Credit.
- Oregon website <http://www.energy.state.or.us>
- Oregon tax credits have been in existence for over 20 years.

Incentives Work Group

Oregon's Business Energy Tax Credit

- Tax Credit - Provides a 35% tax credit of eligible project costs. The credit must be taken 10% first two years and 5% next three years.
- Eligible Project Cost is the incremental cost of the system or equipment beyond standard practice

Incentives Work Group

Oregon's Business Energy Tax Credit -

Who's Eligible?

- Trade, Business or Rental Property owners in Oregon who pay taxes for a business site in Oregon.
- Oregon Caps tax credit at \$14 million a year for the program!

Incentives Work Group

Oregon's Business Energy Tax Credit - What Qualifies?

- Energy Efficiency Improvements
- Weatherizing Rental Property
- Using Renewable Energy
- Recycling Materials
- Transportation Programs

Incentives Work Group

Oregon's Business Energy Tax Credit -

Program Features

- Oregon's Business Energy Tax Credit Pre-approval needed before installation Use 10% less energy than existing equipment
- Lighting measures must save 25% more than Code or existing equipment
- Save 10% more than their Energy Code
- Maximum project size is \$10 million
- No tax credits for items required by state law

Residential Work Group

- Model Energy Code (MEC) is based on Heating Degree Days (HDD) and does not take into account cooling.
- To fix this basic problem, Arizona could use HDD or Cooling Degree Days (CDD), which ever is greatest.
- Create an Arizona code that is based on modifying the MEC (which is now the International Energy Conservation Code).

Residential Work Group

- Modifying MEC/IECC could create problems using existing compliance tools.
- For climate zones where CDD is greater than HDD, the code could be express in % above MEC HDD code to ease use in established programs utilizing MEC.
- For the Phoenix area, using CDD improves the MEC by approximately 15%.

Compliance Work Group

Residential

- MEC compliance tools include the Home Energy Rating System (HERS) and the mortgage industry's Energy Efficient Mortgage procedures.

Commercial

- ASHRAE standard uses Com Check - computerized program to show compliance.

Compliance Work Group

- Need to determine how to show compliance with Arizona standards to receive incentive.
- Use existing national rating tools.
- Builders or independent raters certify efficiency.

RESIDENTIAL

Denny Miller

Leon Manuel Jr.

Karen Krause

Ric Stephenson

Jerry Thieken

Vinnie Hunt

R. Christopher Mathis

Connie Wilhelm

INCENTIVES

Doug Hood

Fred King

Vinnie Hunt

R. Christopher Mathis

Gary Scaramazzo

Connie Wilhelm

COMPLIANCE

Joe Franquero

Ric Stephenson

R. Christopher Mathis

Connie Wilhelm